REMARKS

Claims 1, 4-9, 11, 14, 16-19, 21, and 22-29 are pending in the present application

The rejection of Claims 1, 4-11, 14-19, 21, 22, and 30 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 5,430,606 to Adachi et al is respectfully traversed.

The activated carbon of the present invention is produced by a process comprising:

pulverizing a coconut shell;

carbonizing said coconut shell in an inert atmosphere to produce a coconut shell char; and

heat-treating said coconut shell char at a temperature ranging from 900°C to 1,100°C in a steam gas atmosphere containing an inert gas selected from the group consisting of nitrogen, argon, and a combustion exhaust gas, wherein the content of steam in said steam gas atmosphere ranges from 30% by volume to 100% by volume.

Further, the activated carbon of the present invention has the following features:

1) produced from carbonaceous material consisting essentially of coconut shell;
2) has a BET surface area of 2000 m^2/g to 2500 m^2/g;
3) has an average pore diameter of 1.95 nm to 2.20 nm;
4) at least a part of the activated carbon has a pore diameter of 5.0 nm to 30 nm as calculated by the Cranson-Inkley method;
5) those particles meeting the limitation of (4) have a pore volume of 0.05 cm^3/g to 0.15 cm^3/g;
6) the amount of oxygen contained per g of activated carbon is 1.8 mg to 8.1 mg; and

7) the activated carbon exhibits a spontaneous potential versus a lithium electrode of 2.85 V to 3.03 V in a non-aqueous electrolytic solution.

Adachi et al remains the sole reference relied upon by the Examiner. In maintaining the previous rejections, the Examiner relies on the disclosure at col. 4, lines 25-36 of Adachi et al (specifically Table 2 and Examples 2-8 through 2-10). Examples 2-8 through 2-10 utilize carbonized coconut shells as starting material (element (1) above) and obtain a product having a BET surface area (m^2/g) of 1950 to 2337, which overlaps the claimed range (element (2) above). However, Applicants again note that this is as far as the disclosure of Adachi et al goes. In fact, as the Examiner recognizes elements (3) – (7) are neither disclosed nor suggested by Adachi et al. Applicants further note that Adachi et al fail to disclose or suggest the process by which the activated carbon is prepared.

In an effort to compensate for the deficiency in the disclosure of Adachi et al, the Examiner asserts that elements (3) – (7) are inherently disclosed by Adachi et al because both the claimed invention and the disclosure of Adachi et al utilize the "same material and are activated to an equivalent extent, as shown by their BET surface area."

Applicants direct the Examiner's attention to MPEP §2112, which states:

> "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)

The Examiner has clearly failed to provide any reasonable basis in fact and/or technical reasoning to support a determination of inherency. The Examiner has simply asserted that the undisclosed properties of the present invention are "expected" to be met because the carbon of the present invention and Adachi et al are produced from the "same material and are activated to an equivalent extent, as shown by their BET surface area." The

Examiner has not provided any basis in fact and/or technical reasoning to reasonable support this "expected" result.

Further, as stated above, MPEP §2112 requires that the alleged inherent characteristic (elements (3) – (7)) *necessarily* flows from the prior art disclosure. A belief or possibility (e.g., an expectation) is insufficient to establish inherency. Therefore, Applicants note that the Examiner has failed to make out a proper case of inherency and that there is nothing in the disclosure of Adachi et al to necessarily indicate that the missing elements of the claimed invention is inherent.

Moreover, Applicants further submit that the present invention differs from the disclosure of Adachi et al based on the process by which the activated carbon is produced. The product claimed in Claim 1 is produced by a gas activation process that uses steam. In contrast, the product of Examples 2-8 through 2-10 of Adachi et al are produced by a chemical activation process using alkali hydroxide treatment. Applicant submit that this difference in the process by which the activated carbons are produced further detracts from the Examiner's alleged inherent result and even would show how Adachi et al fails to support a *prima facie* case of obviousness.

With respect to the product-by-process limitation of the presently claimed invention, the courts have enunciated that: "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claims is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 227 USPQ 964 (Fed. Cir. 1985).

There are two important aspects to the foregoing. First, the products must be identical or an obvious variant thereof. Second, patentability of a product may not depend on its method of production, but the method of production cannot be disregarded if that method provides a distinct structure or product. Indeed, the Board and the Courts have said as much, which is set forth in MPEP §2113 in relevant part:

> "The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where... the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. See, e.g. *In re Garnero*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979)... The Board stated that the dispositive issue is whether the claimed factor exhibits any unexpected properties compared with the factor disclosed by the prior art." (citing *Ex parte Gray*, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989)

The foregoing is particularly relevant to the present application. As stated above, the method disclosed by Adachi et al is distinct from the claimed method (Claim 1). Specifically, the method disclosed by Adachi et al is a chemical activation process using alkali hydroxide treatment, whereas the method of Claim 1 is an activation process that uses steam.

Further, Applicants note that there is nothing of record to support the premise that the resultant products are identical or obvious variants of one another. In fact, Adachi et al merely discloses an activated carbon prepared from coconut shell to a BET surface area within the claimed range. There is nothing of record to support the notion that any of elements (3) to (7) are met by the disclosure of Adachi et al.

In fact, as has already been made of record, Adachi et al does not describe or suggest whatsoever the claimed activated carbon, such that the amount of oxygen contained per g of the activated carbon is 1.8 mg to 8.1 mg (element (6)); and the activated carbon exhibits a

spontaneous potential versus a lithium electrode of 2.85 V to 3.03 V in a non-aqueous electrolytic solution (element (7)).

Again, Applicants remind the Examiner that Adachi et al generally describes an activated carbon for use in electric double layer capacitors (column 1, lines 43-47), in which "a high capacitance carbonaceous material [is] obtained by heat-treating an activated carbon precursor at a temperature below 700 °C in an alkali metal hydroxide bath" (column 1, lines 48-51). This precursor material may include "coconut shells" (column 1, lines 56-68). In addition, the reference recites that "carbonization temperature is generally 400-950 °C" (column 2, lines 4-5), in which a temperature "exceeding 950 °C will fail to give high capacitance carbonaceous materials (column 2, lines 9-11). However, beyond the general description of the process steps and the relation of temperature to capacitance, the disclosure in columns 1-3 does *not* refer whatsoever to any oxygen content and/or spontaneous potential properties, as explicitly recited in the claimed invention. These properties are also not described or shown in any of Examples 1-6 and Tables 1-6 of the reference, which are indicated as the best mode for carrying out the invention (column 3, line 40 – column 6, line 43). Therefore, the reference to Adachi et al does not describe all of the limitations required by the claimed invention.

Moreover, the claimed oxygen content and spontaneous potential properties would not be obvious in view of the reference, as the reference suggests methods of obtaining the activated carbon material that are different from the method for obtaining the claimed activated carbon material. Specifically, Adachi et al explicitly describes heat-treating in sodium hydroxide at a temperature of 400 to 500 °C, which directly relates to "a critical increase in capacitance" (column 3, lines 6-10). In contrast, the presently claimed invention requires a steam activation process where the pulverized coconut shell is first carbonized in

an inert atmosphere to produce a coconut shell char and the coconut shell char is heat-treated at a temperature ranging from 900°C to 1,100°C in a steam gas atmosphere containing an inert gas selected wherein the content of steam in said steam gas atmosphere ranges from 30% by volume to 100% by volume.

In view of the foregoing, Applicants submit that the present invention is neither anticipated by nor obvious in view of the disclosure of Adachi et al. Accordingly, Applicants request withdrawal of these grounds of rejection.

Applicants submit that the present application is now in condition for allowance. Early notification of such action is earnestly solicited.

Respectfully submitted,

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